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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,748	07/09/2003	Gary A. Brist	42P12136D	2763

7590 12/06/2004

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EXAMINER

ANYA, IGWE U

ART UNIT	PAPER NUMBER
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2825

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/616,748

Applicant(s)

BRIST ET AL.

Examiner

Igwe U. Anya

Art Unit

2825

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7/9/03, 2/12/04</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 17 – 24, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Mori et al. (US Patent 5821627).

3. Mori et al. teach an apparatus, comprising:

an electrically conductive trace on a substrate, the electrically conductive trace including first (624) and second (662) materials, the electrically conductive trace formed by applying photo-thermal energy to a selected area of a first layer of the first material disposed on a second layer of the second material and diffusing a portion of the first material into a portion of the second material responsive to said applying (col. 9 lines 5 – 21);

wherein the substrate is part of one of a semiconductor package, a printed circuit board, and a die (fig. 17);

wherein the electrically conductive trace includes a copper tin alloy (col. 10 lines 45 – 46);

wherein the electrically conductive trace is between about 10 microns and about 20 microns in thickness and between about 27 microns and about 35 microns in width col. 13 lines 21 – 45);

further comprising an inter-layer dielectric material electrically isolating the electrically conductive trace (fig. 17 element 625, fig. 23 element 3); and

wherein the second material includes copper, and the first material includes tin as a conversion coating material (col. 23 lines 35 – 42).

4. Claims 17 – 19, 21, 23, and 25 are rejected under 35 U.S.C. 102(b) as being anticipated by Mayer et al. (US Patent 5246108).

5. Mayer et al. teach an apparatus, comprising an electrically conductive trace (20) on a substrate, the electrically conductive trace including first (17) and second (16) materials, the electrically conductive trace formed by applying photo-thermal energy (18) to a selected area of a first layer of the first material disposed on a second layer of the second material and diffusing a portion of the first material into a portion of the second material responsive to said applying (col. 5 lines 7 – 23);

wherein the substrate is part of one of a semiconductor package, a printed circuit board, and a die (fig. 2C);

wherein the second layer includes copper (col. 4 lines 38 – 41);

wherein the electrically conductive trace is between about 10 microns and about 20 microns in thickness (col. 4 lines 38 – 55) and between about 27 microns and about 35 microns in width (col. 5 lines 27 – 49, & fig. 2D); and

wherein the first material includes an organic material (col. 4 lines 46 – 53).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2825

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mori et al. (US Patent 5821627) in view of Cole, Jr. et al. (US Patent 5230965).

9. Mori et al. teach the features previously outlined, but lack wherein the first material includes an organic material.

10. However, Cole Jr. et al. teach irradiating a first material including an organic material and a second material to form an inter-diffused material (col. 11 line 67 – col. 12 line 46) to achieve a plating enabling effect (col. 6 lines 56 – 66).

11. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Cole Jr. et al. into the Mori et al. reference to achieve a plating enabling effect.

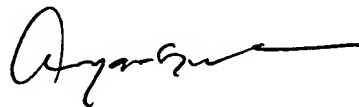
12. Prior art considered, but not used in the rejection include Saka et al. (JP 2000021546).

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Igwe U. Anya whose telephone number is (571) 272-1887. The examiner can normally be reached on M - F 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew S. Smith can be reached on (571) 272-1907. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Igwe U. Anya
Examiner
Art Unit 2825



IA

November 27, 2004